

This listing of claims will replace all prior versions, and listings, of the claims in this application:

Listing of Claims:

Claim 1 (currently amended) A bandpass filter comprising:

a passband frequency tuning control which is configured to vary a passband of
~~the bandpass filter;~~

a Q control gain loop coupled with said tuning control to provide variable Q;

a passband gain control, where said passband gain control is independent of
control of said Q control; and,

a gain summation function coupled between said Q control gain loop and said
passband gain control.

Claim 2 (currently amended) A bandpass filter of claim 1 wherein said
passband frequency tuning control is an RC allpass filter.

Claim 3 (currently amended) A bandpass filter of claim 2 wherein said RC
filter has a resistance control input and a capacitance control input.

Claim 4 (currently amended) A bandpass filter of claim 3 wherein said
resistance control input uses a multiple bit resistance control input.

Claim 5 (currently amended) A bandpass filter of claim 1 wherein said Q
control gain loop is controlled by a multiple bit gain/Q control input.

Claim 6 (currently amended) A bandpass filter of claim 5 wherein said passband gain control is controlled by a multiple bit passband gain control input which is independent of said multiple bit gain/Q control input.

Claim 7 (currently amended) A bandpass filter of claim 6 wherein said multiple bit gain/Q control input and said multiple bit passband gain control are inputs to said gain summation function.

Claim 8 (currently amended) A bandpass filter of claim 1 wherein:

said passband gain control includes an initial passband control summer and a passband transfer function operator; and,

said Q control gain loop includes an initial Q control summer and a Q control transfer function operator.

Claim 9 (currently amended) A bandpass filter of claim 8 wherein said initial passband control summer and said initial Q control summer are identical.

Claim 10 (currently amended) A bandpass filter of claim 8 wherein said passband transfer function operator and said Q control transfer function operator each perform an $(S-A)/(S+A)$ transfer function; where $S = j\omega$ and $A = 1/RC$.

Claim 11 (currently amended) A bandpass filter of claim 10 wherein said passband frequency tuning control performs a transfer function of $(S-B)/(S+B)$ wherein $B = 1/RC$.

Claim 12 (currently amended) A bandpass filter comprising:

means for tuning a filter to a passband frequency;

means for controlling Q via controlling a gain;

means for manipulating a gain in said passband frequency; and

wherein said means for controlling and said means for manipulating are independent.

Claim 13 (cancelled)

Claim 14 (cancelled)

Claim 15 (currently amended) A bandpass filter of claim 12 wherein said means for tuning a passband frequency utilizes a transfer function of: Y

$$= \left[\frac{K_3 - K_1 K_2}{1 + K_4 K_2} \right] \left[\frac{S(B - A)}{S^2 + S(A + B) \left[\frac{1 - K_4 K_2}{1 + K_4 K_2} \right] + (A \cdot B)} \right] + \left[\frac{S^2 - (A \cdot B)}{S^2 + S(A + B) \left[\frac{1 - K_4 K_2}{1 + K_4 K_2} \right] + A \cdot B} \right]$$

Where:

$S = j\omega$

K1 is a gain from a first node to an output of a first block and a second block;

K4 is a gain from a second node to an output of said second block, which is a third node;

K3 is a gain from a fourth node to an output of the second block;

K2 is a gain from a fifth node to an output of the second block.

Claim 16 (currently amended) A bandpass filter of claim 1 wherein said passband frequency tuning control utilizes a transfer function of: Y

$$= \left[\frac{K_3 - K_1 K_2}{1 + K_4 K_2} \right] \left[\frac{S(B - A)}{S^2 + S(A + B) \left[\frac{1 - K_1 K_2}{1 + K_4 K_2} \right] + (A \cdot B)} \right] + \left[\frac{S^2 - (A \cdot B)}{S^2 + S(A + B) \left[\frac{1 - K_1 K_2}{1 + K_4 K_2} \right] + A \cdot B} \right]$$

Where:

$S = j\omega$

K1 is a gain from a first node to an output of a first block and a second block;

K4 is a gain from a second node to an output of said second block, which is a third node;

K3 is a gain from a fourth node to an output of the second block;

K2 is a gain from a fifth node to an output of the second block.